Contents of Volume XXIX

NO. 1. JANUARY 1966

Temporal characteristics of responses to photic stimulation by single ganglion cells in the unopened eye of the cat. OGAWA, T., P. O. BISHOP, AND W. R. LEVICK 1
Frequency specific mechanisms in learning. II. Discriminatory conditioning induced by intracranial stimulation. SCHUCKMAN, H. AND W. S. BATTERSBY 31
Reactions and interactions to stimulation of the motor cortex of the cat. SCHLAG, J. 44
Response of neurons of the dorsal and posteroventral cochlear nuclei of the cat to acoustic stimuli of long duration. GOLDBERG, J. M. AND D. D. GREENWOOD 72
Pharmacological investigations of cochlear responses and of olivocochlear inhibition. TANAKA, Y. AND Y. KATSUKI 94
Click-evoked response patterns of single units in the medial geniculate body of the cat. AITKIN, L. M., C. W. DUNLOP, AND W. R. WEBSTER 109
Announcement 124

NO. 2. MARCH 1966

Wavelength and intensity effects on the response of single lateral geniculate nucleus units in the owl monkey. JONES, A. E. 125
Oscillatory activity in the optic tract of cat and light adaptation. STEINBERG, R. H. 139
Effect of intracerebral hydrocortisone on unit activity of diencephalon and midbrain in cats. SLUSHER, M. A., J. E. HYDE, AND M. LAUFER 157
Cortically evoked depolarization of trigeminal cutaneous afferent fibers in the cat. DARIAN-SMITH, I. AND T. YOKOTA 170
Corticofugal effects on different neuron types within the cat's brain stem activated by tactile stimulation of the face. DARIAN-SMITH, I. AND T. YOKOTA 185
Electrical constants of neurons in the motor cortex of the cat. LUX, H. D. AND D. A. POLLEN 207
Response decrement of the flexion reflex in the acute spinal cat and transient restoration by strong stimuli. SPENCER, W. A., R. F. THOMPSON, AND D. R. NEILSON, JR. 221
Alterations in responsiveness of ascending and reflex pathways activated by iterated cutaneous afferent volleys. SPENCER, W. A., R. F. THOMPSON, AND D. R. NEILSON, JR. 240
Decrement of ventral root electrotonus and intracellularly recorded PSPs produced by iterated cutaneous afferent volleys. SPENCER, W. A., R. F. THOMPSON, AND D. R. NEILSON, JR. 253
Interaction between spinal motoneurons of the cat. NELSON, P. G. 275
Some neural mechanisms in the inferior colliculus of the cat which may be relevant to localization of a sound source. ROSE, J. E., N. B. GROSS, C. D. GEISLER, AND J. E. HIND 288
Effects of hypoxia on the monosynaptic reflex pathway in the cat spinal cord. ECCLES, R. M., Y. LØYNING, AND T. OSHIMA 315

NO. 3. MAY 1966

Retinal ganglion cell response to sinusoidal light stimulation. HUGHES, G. W. AND L. MAFFEI 333
A relation between the threshold of stretch receptors in skeletal muscle and the diameter of their axons. CARPENTER, D. O. AND E. HENNEMAN 353
Conductance changes during inhibitory postsynaptic potentials in normal and strychninized cortical neurons. POLLEN, D. A. AND H. D. LUX 369
Neocortical interconnections in the cat. IMBERT, M., K. E. BIGNALL, AND P. BUSER 382
Optic projections to nonvisual cortex of the cat. BIGNALL, K. E., M. IMBERT, AND P. BUSER 396
Monosynaptic excitation of motoneurons of individual forelimb muscles. WILLIS, W. D., G. W. TATE, R. D. ASHWORTH, AND J. C. WILLIS 410
Pacemaker site of fibrillation potentials in denervated mammalian muscle. BELMAR, J. AND C. EYZAGUIRRE 425
Effect of conditioning stimuli upon evoked potentials in the trigeminal complex. STEWART, D. H., JR. AND R. B. KING 442
Auditory evoked cortical potentials after lesions of brachium of inferior colliculus. ADRIAN, H. O., J. M. GOLDBERG, AND J. F. BRUGGE 456
Inhibition of central vestibular neurons from the contralateral labyrinth and its mediating pathway. SHIMAZU, H. AND W. PRECHT 467
Effect of stimulation of interstitial nucleus of Cajal on vestibular unit activity in the cat. MARKHAM, C. H., W. PRECHT, AND H. SHIMAZU 493
Excitation of lateral vestibular neurons by peripheral afferent fibers. WILSON, V. J., M. KATO, R. C. THOMAS, AND B. W. PETERSON 508
Intracellular recording from extensor motoneurons activated across the gamma loop. GRANIT, R., J.-O. KELLERTH, AND A. J. SZUMSKI 530
Announcements 545

NO. 4. JULY 1966

Differential patterns of activation of the pyramidal system elicited by surface anodal and cathodal cortical stimulation. GORMAN, A. L. F. 547
Representation of afferent visceral systems in cerebral cortex in cat. CHERNIGOVSKII, V. N. AND S. S. MUSIASHCHIKOVA 565
Altered spinal motoneurons in dogs with experimental hind-limb rigidity. GELFAN, S. 583
Dipole characteristics of pyramidal cell activity in cat postcruciate cortex. ROSENTHAL, F., J. W. WOODBURY, AND H. D. PATTON 612
Organization of the vestibular projection to the spinal cord of the cat. ERULKAR, S. D., J. M. SPRAGUE, B. L. WHITSEL, S. DOGAN, AND P. J. JANNETTA 626
An electrophysiological study of the efferent olfactory system in the burbot. DÖVING, K. B. AND G. GEMNE 665
Efferent influence upon the activity of single neurons in the olfactory bulb of the burbot. DÖVING, K. B. 675

Single unit analysis of cat superior olive S segment with tonal stimuli. TSUCHITANI, C. AND J. C. BOUDREAU 684
Functional significance of conduction velocity in the transfer of flicker information in the optic nerve of the cat. FUKADA, Y., K. MOTOKAWA, A. C. NORTON, AND K. TASAKI 698
Light-scattering changes accompanying spreading depression in isolated retina. MARTINS-FERREIRA, H. AND G. DE OLIVEIRA CASTRO 715
Unit analysis of nociceptive mechanisms in the thalamus of the awake squirrel monkey. CASEY, K. L. 727
Functional capacity of the deafferented hypothalamus: water balance and responses to osmotic stimuli in the decerebrate cat and rat. WOODS, J. W., P. BARD, AND R. BLEIER 751
Physiological properties of glial cells in the central nervous system of amphibia. KUFFLER, S. W., J. G. NICHOLLS, AND R. K. ORKAND 768
Effect of nerve impulses on the membrane potential of glial cells in the central nervous system of amphibia. ORKAND, R. K., J. G. NICHOLLS, AND S. W. KUFFLER 788

NO. 5. SEPTEMBER 1966

Multistable firing patterns among several neurons. WYMAN, R. J. 807
Responses of units of the inferior colliculus to time-varying acoustic stimuli. NELSON, P. G., S. D. ERULKAR, AND J. S. BRYAN 834
Changes in the orthodromic and antidromic response of optic tract during the eye movements of sleep. BIZZI, E. 861
Phasic events indicating presynaptic inhibition of primary afferents to the spinal cord during desynchronized sleep. BALDISSERA, F., M. G. CESA-BIANCHI, AND M. MANCIA 871
Loss of a brightness discrimination in the cat following removal of the striate area. SCHILDER, P. 888
Intraretinal slow potentials evoked by brain stimulation in the primate. OGDEN, T. E. 898
Binocular interaction at cat's lateral geniculate body. SUZUKI, H. AND E. KATO 909
Statistical dependency between interspike intervals of spontaneous activity in thalamic lemniscal neurons. NAKAHAMA, H., S. NISHIOKA, T. OTSUKA, AND S. AIKAWA 921
Relation of mean impulse frequency to statistical dependency between intervals in neuronal impulse sequences. NAKAHAMA, H. 935
Slow dark discharge rhythms of cat retinal ganglion cells. RODIECK, R. W. AND P. S. SMITH 942
Evidence for dendritic origin of spikes without depolarizing prepotentials in hippocampal neurons during and after seizure. PURPURA, D. P., J. G. MCMURTRY, C. F. LEONARD, AND A. MALLIANI 954
Announcement 980

NO. 6. NOVEMBER 1966

Integration of semicircular canal activity. SUZUKI, J. AND B. COHEN 981

A mechanism of central compensation of vestibular function following hemilabyrinthectomy. PRECHT, W., H. SHIMAZU, AND C. H. MARKHAM 996

Pyramidal tract activity associated with a conditioned hand movement in the monkey. EVARTS, E. V. 1011

Accommodative reactions of neuronal elements in the spinal cord. USHIYAMA, J., K. KOIZUMI, AND C. MCC. BROOKS 1028

Activity of neural units in medial geniculate body of cat and rabbit. ADRIAN, H. O., W. M. LIFSCHITZ, R. J. TAVITAS, AND F. P. GALLI 1046

Discharge pattern of neurons of the dorsal spinocerebellar tract activated by static extension of primary endings of muscle spindles. JANSEN, J. K. S., K. NICOLAYSEN, AND T. RUDJORD 1061

Discharge patterns of single geniculate neurons during the rapid eye movements of sleep. BIZZI, E. 1087

Properties of frog sympathetic neurons in normal ganglia and after axon section. HUNT, C. C. AND W. K. RIKER 1096

Spatial and chromatic interactions in the lateral geniculate body of the rhesus monkey. WIESEL, T. N. AND D. H. HUBEL 1115

Index 1157

INDEX

Accommodation
  spinal cord motoneurons, interneurons, and intramedullary fibers, 1028
Acetylcholine
  cochlear function, 94
Acoustic stimuli
  binaural sinusoidal, and inferior collicular sound source localization mechanisms, 288
  click-evoked unit responses, medial geniculate nucleus, 109
  evoked cortical potentials in inferior collicular (brachium) lesions, 456
  frequency and amplitude modulated, and inferior collicular unit response, 834
  long duration, and cochlear nuclei neuron response, 72
  tonal, and medial geniculate unit response characteristics, 1046
  tonal, and superior olivary complex S segment unit response, 684
Adaptation, dark
  optic tract oscillatory activity, 139
Adaptation, light
  optic tract oscillatory activity, 139
ADRIAN, H. O., J. M. GOLDBERG, AND J. F. BRUGGE. Auditory evoked cortical potentials after lesions of brachium of inferior colliculus, 456
ADRIAN, H. O., W. M. LIFSCHITZ, R. J. TAVITAS, AND F. P. GALLI. Activity of neural units in medial geniculate body of cat and rabbit, 1046
Afferent neurons, cutaneous
  Dieters' cells facilitation, 508
  repeated stimulation and flexion reflex response decrement and restoration, 221, 240, 253
  repeated stimulation and ascending and reflex pathway activity, 240
Afferent neurons, muscle
  Dieters' cells facilitation, 508
Afferent neurons, muscle spindle
  dorsal spinocerebellar tract activation and neuron discharge pattern, 1061
  stretch threshold and axon diameter, 353
Afferent neurons, optic
  flicker information transfer and conduction velocity, 698
Afferent neurons, somatosensory
  trigeminal cutaneous cortically evoked depolarization, 170
  trigeminal dorsal root reflex, 442
Afferent neurons, spinal motor nerves
  antidromic response during sleep, 870
  depolarization during sleep, 870
  depolarization in hypoxia, 315
AIKAWA, S., 921
AITKIN, L. M., C. W. DUNLOP, AND W. R. WEBSTER. Click-evoked response patterns of single units in the medial geniculate body of the cat, 109
Amphibia
  optic nerve neuroglia, physiologic properties, 768, 788
Ampullary nerve
  stimulation, and eye muscle contraction, 981
Anticholinesterase
  cochlear function, 94
ASHWORTH, R. D., 410
Association cortex
  auditory evoked potentials, lateral midbrain pathway, 456
  evoked response to retinal flash, distribution, 396
  mesenteric nerve representation, 565
  neocortical projections, 382
Auditory cortex
  inferior brachium impulse transmission to areas AI, AII, and Ep, 456
  optic projections in subcortical ablation, 396
Auditory nerves
  pharmacology, 94
Auditory pathways
  inferior collicular neuron mechanisms for sound source localization, 288
  brachium of inferior colliculus, transmission to association cortex, 456
  brachium of inferior colliculus, transmission to auditory areas A1, A11, and Ep, 456
  brachium of inferior colliculus, transmission to sensorimotor cortex, 456
  cochlear nuclei unit response to pure tone, noise, and noise-tone stimuli, 72
  inferior collicular unit response to time-varying acoustic stimuli, 834
  medial geniculate unit response to click, 109
  medial gericulate unit response to pure tone, 1046
  neocortical projections, 382
  superior olivary complex S segment, unit response to tonal stimuli, 684

BALDISSERA, F., M. G. CESA-BIANCHI, AND M. MANCIA. Phasic events indicating presynaptic inhibition of primary afferents to the spinal cord during desynchronized sleep, 871
BARD, P., 751
BATTERSBY, W. S., 31
Behavior
habituation and dishabituation, flexion reflex analogue, 221, 240, 253
intracranial stimulation, anatomical location, 32
light intensity discrimination in striatectomy, stimuli parameters, 888
thalamic units response to noxious stimuli, influence of, 726
BELMAR, J. AND C. EYZAGUIRRE. Pacemaker site of fibrillation potentials in denervated mammalian muscle, 425
BIGNALL, K. E., 382
BIGNALL, K. E., M. IMBERT, AND P. BUSER. Optic projections to nonvisual cortex of the cat, 396
BIZZI, E. Changes in the orthodromic and antidromic response of optic tract during the eye movements of sleep, 861
BIZZI, E. Discharge patterns of single geniculate neurons during the rapid eye movements of sleep, 1087
BISHOP, P. O., 1
BLEIER, R., 751
BOUDREAU, J. C., 684
Brachium, inferior colliculus
auditory impulse transmission to auditory, association, and sensorimotor areas, 456
Brain stem
commissural inhibition of vestibular neuron, pathway, 466
nucleus tractus spinalis caudalis, functional characteristics and morphology, 185
nucleus tractus spinalis oralis, functional characteristics and morphology, 185
trigeminal neurons, corticofugal effects, 185
trigeminal nucleus and primary afferent fiber depolarization, pathway, 170, 185
Brain stimulation
discriminatory conditioning; anatomical location, 32
discriminatory conditioning; transfer, reinforcement, and dissociation, 32
BROOKS, C. MCC., 1028
BRUGGE, J. F., 456
BRYAN, J. S., 834
Burbot
olfactory system, efferent fibers, 665, 675
BUSER, P., 382, 396

CARPENTER, D. O. AND E. HENNEMAN. A relation between the threshold of stretch receptors in skeletal muscle and the diameter of their axons, 353
CASEY, K. L. Unit analysis of nociceptive mechanisms in the thalamus of the awake squirrel monkey, 727
Central nervous system
glial cell properties, optic nerve of amphibia, 768, 788
midbrain and contralateral posterior diencephalon, functional link, 157
neuron sensitivity to hydrocortisone, 157
pituitary-adrenal function regulation, 157
Cerebral cortex
conditioned reflex response to stimulation, 32
evoked response to retinal flash, distribution, 396
neocortical interconnections, 382
nonvisual cortex response to retinal flash, in subcortical ablation, 315
optic projections to nonvisual cortex, 396
trigeminal cutaneous afferent fiber depolarization, cortical stimulation areas, 170
sensorimotor centrifugal projections, somatotopic organization, 170
CESA-BIANCHI, M. G., 871
CHERNIGOVSKII, V. N. AND S. S. MUSIASHCHIKOVA. Representation of afferent visceral systems in cerebral cortex in cat, 565
Cochlea
efferent fibers, noncholinergic, 94
pharmacology and function, 94
Cochlear nuclei
unit response characteristics to pure tone, noise, and noise-tone stimuli, 72
COHEN, B., 981
Conditioning, cerebral
discriminatory response; transfer, reinforcement and dissociation, 32

DARIAN-SMITH, I. AND T. YOKOTA. Cortically evoked depolarization of trigeminal cutaneous afferent fibers in cat, 170
DARIAN-SMITH, I. AND T. YOKOTA. Corticofugal effects on different neuron types within the cat's brain stem activated by tactile stimulation of the face, 185
Deiters' nucleus
ascending spinal pathways, 508
L cells distribution and electrical properties, 508
unit excitation, response to peripheral afferent nerve stimulation, 508
Diencephalon, posterior
pituitary-adrenal function regulation, 157

unit frequency response to intravenous and intracerebral hydrocortisone, 157
Digits
muscle nerves motoneurons, monosynaptic excitatory interconnections, 410
Diptera
flight power muscles motor units firing pattern, phase multistability, 807
DOGAN, S., 626
Dorsal root reflex, trigeminal
characteristics, 442
conditioning stimuli inhibitory effect, 442
infraorbital n. stimulation and gasserian ganglion activity, pathway, 442
trigeminal nucleus caudalis, physiological organization, 442
DÖVING, K. B. Efferent influence upon the activity of single neurons in the olfactory bulb of the burbot, 675
DÖVING, K. B. AND G. GEMNE. An electrophysiological study of the efferent olfactory system in the burbot, 665
DUNLOP, C. W., 109

ECCLES, R. M., Y. LØYNING, AND T. OSHIMA. Effects of hypoxia on the monosynaptic reflex pathway in the cat spinal cord, 315
Efferent fibers
cochlear, noncholinergic, 95
electrotonus and motoneuron PSP's response decrement in repeated cutaneous afferent stimulation, 253
olfactory tract of fish, 665, 675
Electric potentials
hippocampal neurons orthodromic spikes in subiculum stimulation, characteristics and origin, 954
isolated retina, spreading depression and light-scattering changes, 715
motoneuron membrane in hypoxia, 315
motor cortex neuron constants, 206
optic nerve neuroglia, in amphibia, 768, 788
optic tract oscillatory activity in adaptation, 139
pyramidal cell spike potentials and extracellular dipole potential orientation, 612
retinal ganglion cell flicker-fusion/light intensity response, 1
retinal ganglion cell response to sinusoidal light intensity stimulation, 333
retinal ganglion cell slow dark discharge rhythms, 942
spinal motoneuron field potentials and early antidromic interaction, 275
sympathetic ganglion cells, in axon section, 1096
thalamic lemniscal neurons spontaneous impulse sequences, statistical analysis, 921, 935
Electrospinogram
REM bursts, correlation, 870
slow waves and primary afferent depolarization during sleep, 870
motor cortex neurons, passive and active membrane properties in, 206
ERULKAR, S. D., 834
ERULKAR, S. D., J. M. SPRAGUE, B. I. WHITSEL, S. DOGAN, AND P. J. JANNETTA. Organization of the vestibular projection to the spinal cord of the cat, 626
EVARTS, E. V. Pyramidal tract activity associated with a conditioned hand movement in the monkey, 1011
Eye muscles
response to semicircular canal stimulation, 981
EYZAGUIRRE, C., 425

Face stimulation
brain-stem trigeminal nuclei, corticofugal effects, 185
Facilitation
Dieters' cells, 508
spinal motoneurons, 275
Fibrillation
denervated muscle, pacemaker site, 524
Fish
efferent olfactory system, 665, 675
Flexor reflex
activation across gamma loop, 530
habituation and dishabituation analogue, 221, 240, 253
response decrement and restoration, in repeated cutaneous afferent stimulation, 221, 240, 253
Flicker response
optic nerve unit response characteristics and conduction velocity, 698
retinal ganglion cell, area centralis, 1
Flight power muscles
motor unit firing pattern, phase multistability in Diptera, 807
motor unit frequency and phase control, independence, 807
FUKADA, Y., K. MOTOKAWA, A. C. NORTON, AND K. TASAKI. Functional significance of conduction velocity in the transfer of flicker information in the optic nerve of the cat, 698
Fusimotor nerves
extensor motoneuron activation, intracellular recording, 530

GALLI, F. P., 1046
Gamma nerve
extensor motoneuron activation, intracellular recording, 530

Gastrocnemius soleus nerve
activation across gamma loop, 530
Ia afferent terminal stimulation, antidromic response during sleep, 870
GEISLER, C. D., 288
GELFAN, S. Altered spinal motoneurons in dogs with experimental hind-limb rigidity, 583
GEMNE, G., 665
Geniculate body, lateral
cortical evoked response to retinal flash, mediation, 396
cortical projection areas, 396
functional organization, 125
postsynaptic inhibition and binocular interaction, 909
presynaptic inhibition during REM periods, 861
retinal P-wave pathway, 898
spatial and chromatic interactions, 1115
spectral sensitivity plots, 125
unit activity and retinal wavelength sensitivity and discrimination, 125
unit discharge pattern during REM periods, 1087
Geniculate body, medial
active inhibition, 109
click-evoked unit responses, 109
cortical evoked response to retinal flash, mediation, 396
cortical projection areas, 396
unit response characteristics to pure tone ear stimuli, 1046
GOLDBERG, J. M., 456
GOLDBERG, J. M. AND D. D. GREENWOOD. Response of neurons of the dorsal and posteroventral cochlear nuclei of the cat to acoustic stimuli of long duration, 72
GORMAN, A. L. F. Differential patterns of activation of the pyramidal system elicited by surface anodal and cathodal cortical stimulation, 547
Gracilis muscle, anterior
denervated muscle fibrillatory potentials, pacemaker site, 425
GRANIT, R., J.-O. KELLERTH, AND A. J. SZUMSKI. Intracellular recording from extensor motoneurons activated across the gamma loop, 530
GREENWOOD, D. D., 72
GROSS, N. B., 288

Hand movement
conditioned, and pyramidal tract unit activity, 1011
HENNEMAN, E., 353
HIND, J. E., 288
Hind-limb rigidity
lumbosacral motoneurons, electrical properties, 583
Hippocampus
neuronal orthodromic spike potential in subiculum stimulation, characteristics and origin, 954
HUBEL, D. H., 1115
HUGHES, G. W. AND L. MAFFEI. Retinal ganglion cell response to sinusoidal light stimulation, 333
HUNT, C. C. AND W. K. RIKER. Properties of frog sympathetic neurons in normal ganglia and after axon section, 1096
HYDE, J. E., 157
Hydrocortisone
unit activity, diencephalon, 157
unit activity, midbrain, 157
Hypothalamus
osmoreceptors, location and function, 751
Hypoxia
monosynaptic spinal reflexes, 315
primary afferent depolarization, 315

IMBERT, M., 396
IMBERT, M., K. E. BIGNALL, AND P. BUSER. Neocortical interconnections in the cat, 382
Inferior colliculus
binaural sinusoidal stimuli and neuronal spike discharge curves, 288
brachium, impulse transmission to auditory, sensorimotor, and association areas, 456
sound source localization, neuronal mechanisms, 288
unit response to time-varying acoustic stimuli, 834
Insular cortex
optic projections in subcortical ablation, 396
Interstitial nucleus of Cajal
inhibition and activation of vestibular nuclei units, pathway, 493

JANNETTA, P. J., 626
JANSEN, J. K. S., K. NICOLAYSEN, AND T. RUDJORD. Discharge pattern of neurons of the dorsal spinocerebellar tract activated by static extension of primary endings of muscle spindles, 1061
JONES, A. E. Wavelength and intensity effects on the response of single lateral geniculate nucleus units in the owl monkey, 125

KATO, E., 909
KATO, M., 508
KATSUKI, Y., 94
KELLERTH, J.-O., 530
KING, R. B., 442

KOIZUMI, K., 1028
KUFFLER, S. W., 788
KUFFLER, S. W., J. G. NICHOLLS, AND R. K. ORKAND. Physiological properties of glial cells in the central nervous system of amphibia, 768

Labyrinth
  hemilabyrinthectomy and vestibular neuron activity, 996
LAUFER, M., 157
Learning
  discriminatory conditioning, 32
  frequency specific mechanisms, 32
  intracranial stimulation, 32
LEONARD, C. F., 954
LEVICK, W. R., 1
LIFSCHITZ, W. M., 1046
Limbic cortical areas
  mesenteric nerve representation, 565
Light scattering
  isolated retina, media composition and osmolarity, 715
  isolated retina, spreading depression and, 715
LØYNING, Y., 315
LUX, H. D., 369
LUX, H. D. AND D. A. POLLEN. Electrical constants of neurons in the motor cortex of the cat, 207

MAFFEI, L., 333
MALLIANI, A., 954
MANCIA, M., 871
MARKHAM, C. H., 996
MARKHAM, C. H., W. PRECHT, AND H. SHIMAZU. Effect of stimulation of interstitial nucleus of Cajal on vestibular unit activity in the cat, 493
MARTINS-FERREIRA, H. AND G. DE OLIVEIRA CASTRO. Light-scattering changes accompanying spreading depression in isolated retina, 715
Media
  isolated retina, light-scattering changes and solution osmolarity, 715
Membrane potentials
  motoneuron, in hypoxia, 315
  motor cortex neuron conductance during inhibitory postsynaptic potentials, 369
  motor cortex neuron constants, normal and epileptiform, 206
  optic nerve neuroglia, in amphibia, 768, 788
  sympathetic ganglion cells, in axon section, 1096
Mesenteric nerve
  cortical representation, primary and secondary projections, 565
MCMURTRY, J. G., 954
Midbrain
  auditory pathways to association and sensorimotor cortex, 456
  brachium of inferior colliculus, auditory impulse transmission to auditory cortex, 456
  pituitary-adrenal function regulation, 157
  unit frequency response to intravenous and intracerebral hydrocortisone, 157
Monosynaptic reflex
  forelimb muscle nerves, motoneuron excitatory postsynaptic potentials, 410
  lumbosacral motoneurons, in hind-limb rigidity, 583
  presynaptic afferent depolarization in hypoxia, 315
  presynaptic inhibition, supraspinal control during sleep, 870
  responsiveness during flexor twitch decrement, response to repeated cutaneous afferent stimulation, 240
  spinal motoneuron response to hypoxia, 315
MOTOKAWA, K., 698
Motoneurons
  early antidromic interaction and electrical fields, 275
  extensor, activation across gamma loop, 530
  facilitation, 275
  forelimb nerves, monosynaptic excitatory interconnections, 410
  forelimb nerves, myotatic unit hypothesis, 410
  lumbosacral level; electrical properties in hind-limb rigidity, 583
  membrane potentials in hypoxia, 315
  monosynaptic excitatory transmission, posttetanic potentiation, 410
  monosynaptic reflex in hypoxia, 315
  presynaptic afferent depolarization in hypoxia, 315
  PSPs response decrement in repeated cutaneous afferent volleys, 253
Motor cortex
  anodal and cathodal focal stimulation and pyramidal tract cells response, 547
  anterior sigmoid gyrus stimulation and pyramidal tract cells response, 44
  lateral inhibition organization model, 44
  optic projections in subcortical ablation, 396
Motor cortex neurons
  electrical constants, 206
  inhibitory postsynaptic potentials and membrane conductance, 369
Motor end plate
  pacemaker site, denervated muscle fibrillatory potentials, 425

Motor units
Diptera flight power muscles, firing pattern phase multistability, 807
MUSIASHCHIKOVA, S. S., 565
Muscle nerves, forelimb
cervical motoneuron monosynaptic excitation, 410
Muscle nerves, hind limb
afferent stimulation, and Dieters' cells facilitation, 508
denervated muscle fibrillation, end-plate zone pacemaker site, 425
Muscle, skeletal
end-plate zone, pacemaker site for denervation fibrillatory potentials, 425
sensory organs axon diameter-stretch threshold relationship, 353
Muscle spindle
afferent neuron, dorsal spinocerebellar tract activation, 1061
motoneuron activation across gamma loop 530

NAKAHAMA, H. Relation of mean impulse frequency to statistical dependency between intervals in neuronal impulse sequences, 935
NAKAHAMA, H., S. NISHIOKA, T. OTSUKA, AND S. AIKAWA. Statistical dependency between interspike intervals of spontaneous activity in thalamic lemniscal neurons, 921
NEILSON, D. R., JR., 221, 240, 253
NELSON, P. G. Interaction between spinal motoneurons of the cat, 275
NELSON, P. G., S. D. ERULKAR, AND J. S. BRYAN. Responses of units of the inferior colliculus to time-varying acoustic stimuli, 834
Neocortex
interconnections and projection systems, 382, 396
Neuroglia
amphibian optic nerve, physiologic properties, 768, 788
nerve impulse effect on, 788
Neuromuscular transmission
denervated muscle fibrillation, end-plate zone pacemaker site, 425
monosynaptic spinal reflex in hypoxia, 315
Neurotransmitters
olivocochlear inhibition and cochlear function, 94
NICHOLLS, J. G., 768, 788
NICOLAYSEN, K., 1061
NISHIOKA, S., 921
Nociceptive mechanisms
thalamus, unit analysis, 726
Nonvisual cortex
optic projections in subcortical ablation, 396
NORTON, A. C., 698
Noxious stimuli
thalamic unit response to, 726

Obdurator nerve
end-plate zone pacemaker site, gracilis muscle denervation fibrillation, 425
OGAWA, T., P. O. BISHOP, AND W. R. LEVICK. Temporal characteristics of responses to photic stimulation by single ganglion cells in the unopened eye of the cat, 1
OGDEN, T. E. Intraretinal slow potentials evoked by brain stimulation in the primate, 898
Olfactory system
efferent, in fish, 665, 675
OLIVEIRA CASTRO, G. DE, 715
Optic nerve
afferent signal transfer, flicker information, 698
Ferry-Porter law application, single unit response, 698
ipsilateral and contralateral stimulation, geniculate field response, 909
neuroglia, physiologic properties in amphibia, 768, 788
retinal ganglion cell slow dark discharge rhythms, generating mechanism, 942
retinal P-wave pathway, efferent fibers, 898
Talbot plateau law application, single unit response, 698
unit conduction velocity and flicker response characteristics, functional relationship, 698
Optic pathways
cortical evoked response to retinal flash, distribution, 396
nonvisual cortex optic projections, 396
Optic tract
binocular interaction, lateral geniculate field responses in, 909
geniculate neuron unit discharge pattern during REM periods, 1087
lateral geniculate body, spatial and chromatic interaction in, 1115
light adaptation and oscillatory activity, 139
ortho- and antidromic response during REM periods, 861
presynaptic inhibition during REM periods, 861
retinal P-wave pathway, 898
retinal ganglion cell slow dark discharge rhythms, generating mechanism, 942

ORKAND, R. K., 768
ORKAND, R. K., J. G. NICHOLLS, AND S. W. KUFFLER. Effect of nerve impulses on the membrane potential of glial cells in the central nervous system of amphibia, 788
OSHIMA, T., 315
OTSUKA, T., 921
Oxygen tension
  monosynaptic spinal reflexes, 315
  motoneuron membrane potentials in hypoxia, 315

PATTON, H. D., 612
Pain sensation
  thalamic unit activity, 726
PETERSON, B. W., 508
Photic stimuli
  flash frequency and optic tract oscillatory activity, in adaptation, 139
  flicker information transfer, optic nerve, 698
  intensity and frequency, and optic nerve fiber conduction velocity, 698
  intensity and frequency, retinal ganglion cell response, 1, 333
  intermittent, retinal ganglion cell response, 1
  lateral geniculate body unit response to white and monochromatic light, 1115
  luminance and luminous flux, and intensity discrimination in striatectomy, 888
  optic tract evoked potentials during REM periods, 861
  retinal flash and cortical evoked potentials distribution, in subcortical ablation, 396
  retinal ganglion cell slow dark discharge rhythms, generating mechanism, 942
  sinusoidal intensity stimulus, retinal ganglion cell rate response, 333
  wavelength and intensity effects, lateral geniculate unit activity, 125
POLLEN, D. A., 207
POLLEN, D. A. AND H. D. LUX. Conductance changes during inhibitory postsynaptic potentials in normal and strychninized cortical neurons, 369
Postcruciate cortex
  pyramidal cell dipole potentials, 612
Posterior biceps semitendinosus nerve
  group Ia afferent stimulation and cord dorsum potentials during sleep, 870
  motoneuron PSPs decrement, response to iterated cutaneous afferent volleys, 253
PRECHT, W., 467, 493
PRECHT, W., H. SHIMAZU, AND C. H. MARKHAM. A mechanism of central compensation of vestibular function following hemilabyrinthectomy, 996
PURPURA, D. P., J. G. MCMURTRY, C. F. LEONARD, AND A. MALLIANI. Evidence for dendritic origin of spikes without depolarizing prepotentials in hippocampal neurons during and after seizure, 954
Pyramidal tract neurons
  augmenting and late responses to motor cortex stimulation, 44
  dipole potentials in postcruciate cortex, 612
  early potentiation response to thalamic nucleus ventralis stimulation, 44
  lateral inhibition, motor cortex level, 44
  membrane electrical properties, 206
  response to anodal and cathodal focal stimulation of motor cortex, 547
  unit activity in conditioned hand movement, 1011

Receptive fields
  retinal ganglia, organization, 333
Receptors, light
  retinal ganglion cell slow dark discharge rhythms, generating mechanism, 942
Receptors, osmotic
  hypothalamic location, 751
Receptors, stretch
  axon diameter-stretch threshold relationship, 353
Receptors, tension
  contractile stress response and gamma loop inhibition, 530
REM periods
  electrospinogram during, 870
  geniculate neuron unit discharge pattern, 1087
  monosynaptic reflex phasic inhibition, 870
  optic tract ortho- and antidromic response, 861
  optic tract terminals depolarization and lateral geniculate transmission, 861
  primary afferent depolarization, supraspinal control, 870
Retina
  ganglion cell slow dark discharge rhythms, generating mechanisms, 942
  P waves, pathway and mechanism, 898
  spectral sensitivity and lateral geniculate unit activity, 125
Retina, ganglion cells
  area centralis unit response to photic stimuli, temporal characteristics, 1
  critical flicker fusion-light intensity and flash frequency relationships, 1
  receptive fields, organization, 333
  response classification, mathematical model, 333
  sinusoidal light intensity stimulation and firing rate response, 333

slow dark discharge rhythms, characteristics and generating mechanisms, 942
Talbot's law and light intensity responses, 1
transfer characteristics; on-, off-, and on-off cells, 333
Retina, isolated
media composition and osmolarity, 715
spreading depression and light-scattering changes, 715
RIKER, W. K., 1096
RODIECK, R. W. AND P. S. SMITH. Slow dark discharge rhythms of cat retinal ganglion cells, 942
ROSENTHAL, F., J. W. WOODBURY, AND H. D. PATTON. Dipole characteristics of pyramidal cell activity in cat postcruciate cortex, 612
ROSE, J. E., N. B. GROSS, C. D. GEISLER, AND J. E. HIND. Some neural mechanisms in the inferior colliculus of the cat which may be relevant to localization of a sound source, 288
RUDJORD, T., 1061

SCHLAG, J. Reactions and interactions to stimulation of the motor cortex of the cat, 44
SCHILDER, P. Loss of brightness discrimination in the cat following removal of the striate area, 888
SCHUCKMAN, H. AND W. S. BATTERSBY. Frequency specific mechanisms in learning. II. Discriminatory conditioning induced by intracranial stimulation, 31
Seizures
hippocampal neuron orthodromic spike potentials, 954
Semicircular canals
integration of activity, 981
nerve stimulation and eye muscle contraction, 981
Sensorimotor cortex
auditory evoked potentials, lateral midbrain pathway, 456
centrifugal projections and trigeminal cutaneous afferent depolarization, 170
pyramidal cell dipole potentails, 612
SHIMAZU, H., 493, 996
SHIMAZU, H. AND W. PRECHT. Inhibition of central vestibular neurons from the contralateral labyrinth and its mediating pathway, 467
Sleep
electrospinogram during, 870
gastrocnemius-soleus n. antidromic response, 870
geniculate neuron unit discharge pattern during REM periods, 1087
optic tract ortho- and antidromic response during REM periods, 861
primary afferent depolarization, 870
SLUSHER, M. A., J. E. HYDE, AND M. LAUFER. Effect of intracerebral hydrocortisone on unit activity of diencephalon and midbrain in cats, 157
SMITH, P. S., 942
Somatosensory cortex
neocortical projections, 382
visceral afferent systems representations, 565
SPENCER, W. A., R. F. THOMPSON, AND D. R. NEILSON, JR. Response decrement of the flexion reflex in the acute spinal cat and transient restoration by strong stimuli, 221
SPENCER, W. A., R. F. THOMPSON, AND D. R. NEILSON, JR. Alterations in responsiveness of ascending and reflex pathways activated by iterated cutaneous afferent volleys, 240
SPENCER, W. A., R. F. THOMPSON, AND D. R. NEILSON, JR. Decrement of ventral root electrotonus and intracellularly recorded PSPs produced by iterated cutaneous afferent volleys, 253
Spinal cord
ascending pathway to lateral vestibular nucleus, 508
ascending and reflex pathways activity, response to repeated cutaneous afferent stimulation, 240
electrospinogram, sleep-wakefulness cycle, 870
interneuron response to dorsal root, motor cortex, and vestibular nerve stimulation, 626
motoneurons, interneurons, and intramedullary fiber accommodative reaction, 1028
vestibular projection, organization, 626
Spinal reflex
electrospinogram during sleep-wakefulness cycle, 870
hypoxia, 315
primary afferent depolarization, 315, 870
REM periods, 870
ventral root fiber decrement response and restoration, in repeated cutaneous afferent stimulation, 240, 253
Spinocerebellar tract, dorsal
neuronal discharge pattern, response to activation by muscle spindle afferent, 1061
spinal cord interneuron excitatory input, 1061
SPRAGUE, J. M., 626
STEINBERG, R. H. Oscillatory activity in the

optic tract of cat and light adaptation, 139
Steroids
diencephalic and midbrain neuron sensitivity to, 157
STEWART, D. H., JR. AND R. B. KING. Effect of conditioning stimuli upon evoked potentials in the trigeminal complex, 442
Striate cortex
light intensity discrimination in striatectomy, parameters of stimulation, 888
Strychnine
motor cortex neuron electrical properties, 207
Subcortical ablation
optic projections to nonvisual cortex, 396
Subiculum stimulation
hippocampal neurons orthodromic spikes, characteristics and origin, 954
Superior olivary complex
S segment unit response to tonal stimuli, 684
Supraoptic nucleus
deafferentation and osmoreceptor function, 751
SUZUKI, H. AND E. KATO. Binocular interaction at cat's lateral geniculate body, 909
SUZUKI, J.-I. AND B. COHEN. Integration of semicircular canal activity, 981
Synaptic transmission
corticofugal effects, somatic afferent relay nuclei, 170, 185
flexion reflex response to iterated cutaneous afferent volleys, 253
forelimb nerve motoneurons, monosynaptic excitation, 410
hippocampal neurons during subiculum stimulation, 954
hypoxia, 315
inhibitory postsynaptic potentials and membrane conductance, motor cortex neurons, 369
lateral geniculate inhibition and binocular interaction, 909
optic tract terminals depolarization during REM periods, 861
presynaptic inhibition during sleep, 890
primary afferent depolarization, presynaptic component, 170
primary afferent depolarization, somatosensory pathway, 170
spinal cord interneuron response to vestibular nerve stimulation, 626
sympathetic ganglion cells, in axon section, 1096
Sympathetic ganglion cells
response to axon section, 1096
response to ortho- and antidromic stimulation, 1096
Synergism
forelimb nerves motoneurons, monosynaptic interconnections, 410
SZUMSKI, A. J., 530

TANAKA, Y. AND Y. KATSUKI. Pharmacological investigations of cochlear responses and of olivocochlear inhibition, 94
TASAKI, K., 698
TATE, G. W., 410
TAVITAS, R. J., 1046
Tendon organs
stretch threshold and axon diameter, 353
Thalamus
lemniscal neurons spontaneous impulse sequences, statistical analysis, 921, 935
medial intralaminar and posterolateral areas, unit response to noxious stimuli, 726
nucleus ventralis stimulation and pyramidal cell early potentiation response, 44
THOMAS, R. C., 508
THOMPSON, R. F., 221, 240, 253
Trigeminal nerve
cutaneous afferent fiber depolarization, cortically evoked, 170
dorsal root reflex, characteristics and pathway, 442
Trigeminal nuclei
functional characteristics and morphology, 185
nucleus caudalis function in trigeminal dorsal root reflex, 442
primary afferent fiber depolarization, brain-stem pathway, 170
TSUCHITANI, C. AND J. C. BOUDREAU. Single unit analysis of cat superior olive S segment with tonal stimuli, 684

USHIYAMA, J., K. KOIZUMI, AND C. MCC. BROOKS. Accommodative reactions of neuronal elements in the spinal cord, 1028

Ventral root fibers
flexion reflex response decrement and restoration in repeated cutaneous afferent stimuli, 221, 240, 253
Vestibular nerve
stimulation, and spinal interneuron inhibition and excitation, 626
Vestibular nuclei
field potentials, response to contralateral vestibular nerve stimulation, 466
peripheral nerve stimulation and lateral vestibular unit excitation, 508

unit response to stimulation of nucleus of Cajal, 493
Vestibular system
central compensation of function after hemilabyrinthectomy, 996
commissural inhibition of vestibular neuron, mediating pathway, 467
interstitial nucleus of Cajal and vestibular nuclei, relationships, 493
peripheral nerve stimulation and lateral vestibular neuron excitation, 508
semicircular canal activity, integration, 981
spinal cord projection, and ascending systems, 508
spinal cord projection, organization, 626
Viscera
cortical representations, 565
Visual cortex
evoked response to retinal flash, distribution, 396
light intensity discrimination in striatectomy, 888
Visual system
binocular interaction, lateral geniculate body, 909
lateral geniculate body, spatial and chromatic interaction in, 1115
lateral geniculate inhibition in binocular interaction, 909
lateral geniculate functional organization, 125
neocortical projections, 382, 396
optic nerve conduction velocity and flicker information transfer, 698
optic projections to nonvisual cortex in subcortical ablation, 396
optic tract ortho- and antidromic responses during REM periods, 861
optic tract oscillatory activity in adaptation, 139
retinal ganglion cell, flicker-fusion/light intensity response, 1
retinal ganglion cell, receptive field organization, 333
retinal ganglion cell, response classification measure, 333
retinal ganglion cell, sinusoidal light intensity response, 333
retinal ganglion cell slow dark discharge rhythm, generating mechanism, 942
retinal P waves, pathway and mechanism, 898
retinal wavelength sensitivity and discrimination, mechanism, 125
spreading depression and light-scattering changes, isolated retina, 715

Water balance
hypothalamic deafferentation, 751
osmoreceptors location and function, 751
WEBSTER, W. R. 109
WHITSEL, B. L., 626
WIESEL, T. N. AND D. H. HUBEL. Spatial and chromatic interactions in the lateral geniculate body of the rhesus monkey, 1115
WILLIS, J. C., 410
WILLIS, W. D., G. W. TATE, R. D. ASHWORTH, AND J. C. WILLIS. Monosynaptic excitation of motoneurons of individual forelimb muscles, 410
WILSON, V. J., M. KATO, R. C. THOMAS, AND B. W. PETERSON. Excitation of lateral vestibular neurons by peripheral afferent fibers, 508
WOODBURY, J. W., 612
WOODS, J. W., P. BARD, AND R. BLEIER. Functional capacity of the deafferented hypothalamus: water balance and responses to osmotic stimuli in the decerebrate cat and rat, 751
Wrist
muscle nerves motoneurons, monosynaptic excitatory interconnections, 410
WYMAN, R. J. Multistable firing patterns among several neurons, 807

YOKOTA, T., 170, 185